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PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 62934	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/050918	International filing date (*day/month/year*) 02 décembre 2003 (02.12.2003)	Priority date (*day/month/year*) 03 décembre 2002 (03.12.2002)
International Patent Classification (IPC) or national classification and IPC G02F 1/1362		
Applicant THALES		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
01 juillet 2004 (01.07.2004)	03 January 2005 (03.01.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/EP2003/050918

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-16, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages 1-14, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the drawings:

pages 1/8-8/8, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/EP 03/50918

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	6-10	YES
	Claims	1-5, 11-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations

Novelty and inventive step (PCT Article 33)

1. Claim 1 does not fulfil the requirements of PCT Article 33(1) because the subject matter thereof does not appear to involve an inventive step under the terms of PCT Article 33(3).

1.1 Indeed, document US-A-5 286 983 (D1) discloses an active matrix structure for a display screen [column 1, lines 12 and 13], which structure is formed on a transparent substrate [column 1, lines 14 and 15] and includes pixel electrodes arranged in rows and columns [column 1, lines 16 to 18], a switching device associated with each electrode [column 1, lines 29 to 31], and corresponding row select lines [column 1, line 31], wherein each select line is positioned between two consecutive rows of pixel electrodes [figures 6 and 7: each select line 32 is positioned between two rows of pixel electrodes 38]. Said structure includes a bus under each row of pixel electrodes, which bus is made of a conductive transparent material [column 8, lines 62 to 68], has substantially the same width as said row [figure 7], and is positioned on a level of said structure that

is separated from the select line level and the pixel electrode level by at least one insulating layer [column 8, lines 62 to 68]. Said bus is connected to the select line of an adjacent row of pixel electrodes [figure 6] and constitutes a storage capacitor with each pixel electrode in said row [column 8, lines 62 to 68].

1.2 The only feature in said claim that is not explicitly disclosed in **D1** is the fact that each conductive bus is connected to the select line of a *previous* row of pixel electrodes. However, even though the concrete examples in **D1** indicate a connection between each bus and the *subsequent* select line, the actual disclosure of the invention in **D1** is more general [column 3, lines 10 to 12: "... connected ... to the gate conductor for an *adjacent* row of TFTs"]. Since only two select lines are adjacent to a conductive bus, a person skilled in the art would consider the two options for connecting a conductive bus to an adjacent select line to be equivalent. Moreover, no distinction can be made between a *previous* and a *subsequent* select line once the scan direction of the matrix has been set because the structure itself is "vertically" symmetrical.

1.3 An identical structure is also disclosed in the article by T. Sugawara et al., published in *Optical engineering*, vol. 33 (1994), pages 3683 to 3688 (**D2**) [see figure 2(c)].

2. The subject matter of claims 2 to 5 and 11 to 14 likewise does not appear to involve an inventive step under the terms of PCT Article 33(3).

2.1 Claims 2 and 3: see figure 6 in **D1** and figure 2(c) in **D2**.

2.2 Claim 4: **D1** discloses that each storage capacitor bus is connected to a corresponding select line at the two ends thereof so as to enable transistor addressing in the event that said select line is broken [see column 5, lines 45 to 54]. In light of this, a person skilled in the art would immediately realise that, by increasing the number of connections between said storage capacitor bus and the corresponding select line, for example, *in each switching device (TFT)*, the latter can be addressed even when the select lines have been broken in a plurality of locations.

2.3 Claim 5: see **D1**, column 4, lines 18 to 20; and **D2**, figure 2(c).

2.4 Claims 11 and 12: figures 8 and 9 (a and b) in **D1** disclose that the transistors are top-gate transistors and that the storage capacitor buses (46 and 46a) are positioned on a higher level than the select lines (32 and 58). However, it would appear that said storage capacitor buses are positioned either on the same level or on a lower level than the data lines. Nevertheless, a person skilled in the art is aware that the vertical order of the various conductive layers is not inflexible and can, depending on the particular circumstances, be modified. As a result, the two orders indicated in claims 11 and 12 correspond to alternative embodiments that are routine practice to a person skilled in the art.

2.5 Claim 13: see **D1**, column 1, lines 5 to 9; and the title of **D2**.

2.6 Claim 14: even though neither **D1** nor **D2** discloses, in a precise manner, the manner in which the display screen is controlled, **D1** discloses (column 1, lines 48 to 57) that the pixel electrodes are addressed consecutively and that the voltage applied to said pixel electrodes is maintained when the corresponding transistor is no longer conductive. The row select lines are thus controlled by a pulsed line addressing signal. Moreover, even though **D1** does not disclose whether a black and white or a grey level display is envisaged, a person skilled in the art is aware that, in the case of a grey level display, the voltage applied to the pixel electrodes varies depending on the level of grey desired. As a result, the line addressing signal must necessarily be on a plurality of voltage levels.

3. The subject matter of claims 6 to 10 would, on the other hand, appear to involve an inventive step under the terms of PCT Article 33(3).

3.1 Claims 6 and 7: none of the documents cited in the international search report discloses or suggests an arrangement for a conductive bus, wherein at least one portion of said bus overlaps the channel of each transistor in the adjacent or subsequent row. Such an arrangement enables enhanced control of said transistors in the off-state thereof and a reduction in leakage current.

3.2 Claims 8 to 10: these claims are directly or

indirectly dependent on claims 6 and 7 and, as a result, the subject matter thereof also involves an inventive step.